

## 2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

- a. **Receiving Water.** The Discharger discharges to Deer Creek, a tributary to Yuba River, Englebright Dam to Feather River Hydrologic Area (515.3) within the Sacramento Hydrologic Basin. Refer to Attachment F, Section III.
- b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. The *California Toxics Rule* and the *National Toxics Rule*, contain water quality criteria for seven metals that vary as a function of hardness, the lower the hardness the lower the water quality criteria. The hardness-dependent metals include cadmium, copper, chromium III, lead, nickel, silver, and zinc. The equation describing the general formulation of the criteria is as follows

$$\text{CTR Criterion (expressed as dissolved)} = \text{WER} \times \text{CF} \times e^{m[\ln(H)]+b} \quad (\text{Equation 1})$$

Where:

WER = water-effect ratio (default of 1.0 used in this Order)

CF = total to dissolved conversion factor

m = criterion-specific constant

H = Hardness

b = criterion-specific constant

The constants "m" and "b" are specific to both the metal under consideration, and the type of criterion (i.e., acute or chronic)

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. Recent studies indicate that using the receiving water lowest hardness for establishing water quality criteria is not the most protective for the receiving water. The Regional Water Board has evaluated these studies and concurs that for some parameters the beneficial uses of the receiving water are best protected using the lowest hardness value of the effluent, while for some parameters, the use of both the lowest hardness value of the receiving water and the lowest hardness value of the effluent is the most protective, provided sufficient hardness data for the effluent and receiving water are available.

Because of the non-linearity of the Criterion equation, the relationship can be either concave downward or concave upward depending on the criterion-specific constants. For those contaminants whereby the regulatory criteria exhibit a concave downward relationship as a function of hardness (e.g., acute and

chronic copper, chromium III, nickel, and zinc, and chronic cadmium), use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. For purposes of establishing water quality-based effluent limitations, water quality criteria for acute and chronic copper, acute and chronic chromium III, acute and chronic nickel, acute and chronic zinc, and chronic cadmium were developed using the lowest effluent hardness value 107 mg/L. Water quality criteria for acute cadmium, acute and chronic lead, and acute silver were developed using the lowest receiving water hardness value 48 mg/L and the lowest effluent hardness 107 mg/L.

- c. **Assimilative Capacity/Mixing Zone.** Based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water beneficial uses. The impact of assuming zero dilution/assimilative capacity within the receiving water is that the discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water.

### 3. Determining the Need for WQBELs

- a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, *"...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)"* in Title 22 of CCR. The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."*
- b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for dibromochloromethane

and dichlorobromomethane. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A detailed discussion of the RPA for each constituent is provided below.

- c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control. The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*" Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.
- d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.
- e. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average, criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature.

The previous Order contained "floating" effluent limitations for ammonia. This Order contains effluent limitations for ammonia to assure the treatment process adequately nitrifies the waste stream to protect the aquatic life beneficial uses. Effluent limitations for ammonia in this Order are fixed year-round limitations that are based on reasonable worst-case conditions.

The maximum permitted effluent pH is 8.0. (The Discharger requested the maximum pH in the effluent be restricted to 8.0.) The Discharger's request is more restrictive than the Basin Plan objectives for pH. The Basin Plan objective for pH in the receiving stream is 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an aquatic organism, the pH of 8.0 was used to determine the CMC for ammonia as 5.62 mg N/L as a 1-hour average.

Because Deer Creek is sometimes dominated by the effluent, effluent temperature and pH data from the Discharger's monthly monitoring reports between October 2004 and June 2008 were used to develop the chronic criteria. The CCC for ammonia varies with pH and temperature. Using effluent data from 1 October 2004 through 30 June 2008, the CCC was calculated for each day when temperature and pH were measured. The lowest 99.9% 30-day average CCC was 2.75 mg N/L during this period. The USEPA recommended maximum 4-day average concentration is 2.5 times the 30-day average CCC or 6.88 mg N/L as a 4-day average.

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day chronic criterion. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day chronic criterion was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day average, and 30-day chronic criteria is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. The ammonia effluent limitations are 2.3 mg/L (as N) as the AMEL and 5.6 mg/L (as N) as the MDEL. (See Section IV.C.4, Table F-5, of the Fact Sheet for calculations of the AMEL and MDEL for ammonia.)

The MEC for ammonia was 1.0 mg N/L based on 429 samples collected between 1 October 2004 and 31 July 2007 (before the treatment plant upgrades). The MEC for ammonia since the new upgrades to the treatment facility were completed was 0.9 mg N/L based on 139 samples collected between 1 August 2007 and 30 June 2008. The remaining 138 samples collected since the new upgrades had a concentration of 0.6 mg N/L or less. The maximum 30-day average ammonia concentration since the new upgrades was 0.3 mg N/L. Based on the effluent sample results it appears the Discharger is able to comply with the effluent limitations for ammonia. Weekly monitoring of ammonia is required in this Order.

- f. **Carbon Tetrachloride.** The State Primary MCL for carbon tetrachloride is 0.5 µg/L. The CTR criterion for human health protection for consumption of water and aquatic organisms is 0.25 µg/L.

Carbon tetrachloride was detected in the effluent in one sample out of a total of seven samples. In the one sample collected in July 2003, the laboratory reported a "Detected but not Quantified" (DNQ) at 0.4 µg/L. Because carbon tetrachloride was only detected in one sample and not quantified, it is uncertain whether reasonable potential exists to cause or contribute to an in-stream excursion above the CTR criterion. Carbon tetrachloride was used as a soil fumigant, cleaning fluid and degreasing agent, in fire extinguishers, and spot removers. These uses are now banned and it is only used in some industrial applications, therefore carbon tetrachloride is not expected in this POTW's effluent from a residential service area. Given that carbon tetrachloride is not expected in the wastewater from the Facility, the representation of the detected sample is questionable. Quarterly monitoring has been established for carbon tetrachloride in this Order to gather additional information to determine if carbon tetrachloride is present in the effluent. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- g. **Chlorine Residual.** The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to Deer Creek. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The USEPA *Technical Support Document for Water Quality-based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order.

The chlorine effluent limitations in this Order are the same as the limitations in the previous NPDES permit. If compliance is maintained, the Regional Water Board does not anticipate residual chlorine impacts to benthic organisms. Based on the data reported during the term of Order No. R5-2002-0093, it appears as if the Discharger can immediately comply with these new effluent limitations chlorine residual.

As described in Section II.E above, the Discharger plans on replacing the hypochlorite disinfection system with an ultraviolet light disinfection system.

Once on-line and operational, and after the Discharger submits written certification to the Regional Water Board that it has ceased all use of chlorine-containing agents in its wastewater treatment process, the Discharger will not be required to monitor for compliance with chlorine residual.

- h. **Copper.** The CTR includes a hardness-dependent standard for the protection of freshwater aquatic life for copper. The CTR standards for metals are presented in dissolved concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the worst-case measured hardness from the receiving water (48 mg/L as  $\text{CaCO}_3$ ) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum four-day average concentration) is 5.0  $\mu\text{g/L}$  and the applicable acute criterion (maximum one-hour average concentration) is 7.0  $\mu\text{g/L}$ , as total recoverable. However, based on recent studies for contaminants where criteria exhibit a concave downward relationship as a function of hardness (e.g. acute and chronic copper), use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water is higher. Using the lowest recorded effluent hardness (107 mg/L as  $\text{CaCO}_3$ ) the applicable chronic criterion is 9.9  $\mu\text{g/L}$  and the applicable acute criterion is 14.9  $\mu\text{g/L}$ .

Copper was detected at concentrations ranging from 2.6 to 6.1  $\mu\text{g/L}$  in the effluent in seven samples collected between May 2003 and October 2006. Using effluent hardness to establish the objectives for copper no reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion exists. Quarterly monitoring has been established for hardness and copper in this Order to gather additional information to determine if copper is present in the effluent above the CTR criterion. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- i. **Dibromochloromethane.** The CTR includes a dibromochloromethane criterion of 0.41  $\mu\text{g/L}$  for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dibromochloromethane was 1.2  $\mu\text{g/L}$ , based on seven samples collected between May 2003 and October 2006. The concentration of dibromochloromethane in upstream receiving water was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dibromochloromethane. An AMEL and MDEL for dibromochloromethane of 0.41  $\mu\text{g/L}$  and 0.82  $\mu\text{g/L}$ , respectively, are included in this Order based on based on the CTR criterion for the protection of human health (see Attachment F, Table F-6 for WQBEL calculations).

The sample results for the effluent indicate that the Discharger will not be able to meet the new limitations. The Discharger has indicated in a Revised Infeasibility Report submitted 1 August 2008 that additional time will be required to comply

with the final effluent limits for dibromochloromethane. The Discharger anticipates that the addition of ultraviolet disinfection and eliminating chlorine will be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed, and put into operation within a reasonable period of time. Furthermore, the effluent limitations for dibromochloromethane are a new regulatory requirement within this permit which become effective upon the effective date of this Order. Therefore, a compliance time schedule order for compliance with dibromochloromethane effluent limitations is established in TSO No. R5-2009-0005 in accordance with CWC sections 13000 and 13385. Order No. R5-2009-0005 also includes interim effluent limitations.

- j. **Dichlorobromomethane.** The CTR includes a dichlorobromomethane criterion of 0.56 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dichlorobromomethane ranged from 2.1 to 14.6 µg/L, in seven samples collected between May 2003 and October 2006. The concentration of dichlorobromomethane in upstream receiving water was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

An AMEL and MDEL for dichlorobromomethane of 0.56 µg/L and 1.12 µg/L, respectively, are included in this Order based on based on the CTR criterion for the protection of human health (see Attachment F, Table F-7 for WQBEL calculations).

The sample results for the effluent indicate that the Discharger will not be able to meet the new limitations. The Discharger has indicated in a Revised Infeasibility Report submitted 1 August 2008 that additional time will be required to comply with the final effluent limits for dichlorobromomethane. The Discharger anticipates that the addition of ultraviolet disinfection and eliminating chlorine will be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed, and put into operation within a reasonable period of time. Furthermore, the effluent limitations for dichlorobromomethane are a new regulatory requirement within this permit which become effective upon the effective date of this Order. Therefore, a compliance time schedule order for compliance with dichlorobromomethane effluent limitations is established in TSO No. R5-2009-0005 in accordance with CWC sections 13000 and 13385. Order No. R5-2009-0005 also includes interim effluent limitations.

- k. **Diquat.** USEPA's Ambient Water Quality Criteria for freshwater aquatic life protection (instantaneous maximum standard) for diquat is 0.5 µg/L. Diquat was detected at 15 µg/L, in one of seven samples collected between May 2003 and October 2006. The treatment facility effluent is primarily domestic wastewater and the high value reported for a chemical that is used as an aquatic herbicide is questionable. Because diquat was only detected in one sample, it is uncertain

whether collection and procedures were adequate and whether reasonable potential to cause or contribute to an in-stream excursion above the ambient water quality criterion exists. Quarterly monitoring has been established for diquat in this Order to gather additional information to determine if diquat is present in the effluent. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- I. **Mercury.** The current USEPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a one-in-a-million cancer risk) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that *"...more stringent mercury limits may be determined and implemented through use of the State's narrative criterion."* In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The maximum observed effluent mercury concentration was 0.0074 µg/L, which is below the aquatic life and human health criteria. However, the Lower Feather River and the Sacramento/San Joaquin Delta have been listed as impaired pursuant to Section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impacts on beneficial uses.

Because the receiving water is tributary to the Feather River, the discharge must not cause or contribute to increased mercury levels. This Order contains a performance-based mass effluent limitation of 0.0021 lbs/month for mercury. This limitation is intended to maintain the mercury loading at the current level until a total maximum daily load (TMDL) can be established and USEPA develops mercury standards that are protective of human health. The mass limitation was derived using the maximum observed effluent mercury concentration and the reported average daily effluent flow rate. Compliance time schedules have not been included in this Order. If USEPA develops new water quality standards for mercury, this permit may be reopened and the Effluent Limitations modified, as necessary.

- m. **Methylene blue active substances (MBAS).** The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit for foaming agents (MBAS) is 500 µg/L. MBAS was detected at 540 µg/L in one of seven samples collected between May 2003 and October 2006. Because MBAS was only detected in only one sample, it is uncertain whether reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL exists. Quarterly monitoring has been established for MBAS in this Order to gather

additional information to determine if MBAS is present in the effluent. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- n. **Nitrite and Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The California DHS has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10,000 µg/L as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10,000 µg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate. AMELs for nitrite and nitrate of 1 mg/L and 10 mg/L, respectively, are included in this Order based on the MCLs. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

The MEC for nitrate was 48.3 mg/L, based on 149 samples collected between 31 August 2004 and 31 July 2007 (before the treatment plant upgrades). The upstream receiving water nitrate concentration was not available. The MEC for nitrate since the new upgrades to the treatment facility were completed was 7.3 mg/L based on 39 samples collected between 8 August 2007 and 29 May 2008. Therefore, with the completion of the plant upgrades, it appears the Discharger will be in compliance with primary MCL for nitrate.

AMELs for nitrite and nitrate of 1.0 mg/L and 10 mg/L respectively are included in this Order based on the MCL. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

- o. **Persistent Chlorinated Hydrocarbon Pesticides.** Alpha-BHC (alpha-hexachlorocyclohexane) was detected in one of seven samples collected between May 2003 and October 2006 at a concentration of 0.035 µg/L. However, in 14 additional samples collected between March 2007 and July 2008, alpha-BHC was not detected at the minimum acceptable reporting level as indicated in appendix 4 of the SIP. Aldrin was reported once as detected, but not quantified at 0.005 µg/L in one out of seven sampling events between May 2003 and October 2006. However, in 14 additional samples collected between March 2007 and July 2008 aldrin was not detected at the minimum acceptable reporting level as indicated in appendix 4 of the SIP. Aldrin was banned from all uses in 1987 and it is not expected to be present in the wastewater from a residential service area. Each of these constituents is a chlorinated hydrocarbon pesticide. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The CTR contains numeric criteria for alpha-BHC and aldrin of 0.0039 µg/L and 0.00013 µg/L respectively for freshwaters from which both water and organisms are consumed. Based on the new information it does not appear that there is reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan Objective. Annual monitoring is included in this Order for alpha-BHC and aldrin. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

Gamma-BHC (lindane) was detected in the effluent in four out of seven CTR sampling events between May 2003 and October 2006, with concentrations ranging from 0.012 µg/L to 0.14 µg/L. The CTR contains a numeric criterion for lindane of 0.019 µg/L. The detection of lindane in the effluent indicates a reasonable potential to exceed the Basin Plan limitations for the CTR criterion for lindane. However, in 14 additional samples collected between March 2007 and July 2008, lindane was not detected at a reported level of 0.01 µg/L. The minimum acceptable reporting level is 0.02 µg/L, as indicated in appendix 4 of the SIP. Therefore based on the new information, an effluent limitation for lindane is not included in this Order. Annual monitoring is included in this Order for lindane. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- p. **Pathogens.** The beneficial uses of the Deer Creek include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the Regional Water Board finds that the wastewater must be disinfected and

adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.

The California Department of Public Health (DPR) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "*...an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*" Title 22 is not directly applicable to surface waters; however, the Regional Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by DPH for unrestricted reuse of reclaimed water because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent limitations for total coliform organisms are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level that consistently achieves the total coliform organism effluent limitations included in this Order.

In addition to coliform testing, turbidity is used as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The previous Order established effluent limitations for turbidity. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and

requires several hours, to days, to identify high coliform concentrations. The limitations in the previous Order were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for total coliform organism. The effluent limitations were not intended to regulate turbidity in the receiving water. Therefore, to ensure consistent compliance with the total coliform organism disinfection limitations included in this Order, a turbidity specification is included in this Order as an operational specification prior to disinfection. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.

- q. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "...pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses." Effluent limitations for pH are included in this Order based on the Basin Plan objectives for pH and the Discharger's request to limit the upper pH limit to 8.0.
- r. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, sulfate, and chloride.

**Table F-4. Salinity Water Quality Criteria/Objectives**

Parameter	Agricultural WQ Goal <sup>1</sup>	Secondary MCL <sup>3</sup>	Effluent	
			Avg	Max
EC (µmhos/cm)	Varies <sup>2</sup>	900, 1600, 2200	631	997
TDS (mg/L)	Varies	500, 1000, 1500	360	486
Sulfate (mg/L)	Varies	250, 500, 600	70.3	85.9
Chloride (mg/L)	Varies	250, 500, 600	46.9	51.9

1 Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)

2 The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 µmhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

3 The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

- i. **Chloride.** The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The recommended agricultural water quality goal for chloride, that would apply the narrative chemical constituent objective, is 106 mg/L as a long-term average based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water

quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers. The average chloride concentration in the effluent was 47 mg/L with a maximum reported concentration of 52 mg/L. The effluent does not exceed the secondary MCL recommended level of 250 mg/L.

- ii. **Electrical Conductivity (EC).** The secondary MCL for EC is 900  $\mu$ mhos/cm as a recommended level, 1600  $\mu$ mhos/cm as an upper level, and 2200  $\mu$ mhos/cm as a short-term maximum. The recommended agricultural screening value, that would apply the narrative chemical constituents objective, is 700  $\mu$ mhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700  $\mu$ mhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e., a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

A review of the Discharger's monitoring reports from 31 August 2004 through 31 July 2007 shows an average effluent EC of 631  $\mu$ mhos/cm, with a range from 179  $\mu$ mhos/cm to 997  $\mu$ mhos/cm for 159 samples. The background receiving water EC averaged 103  $\mu$ mhos/cm in 152 sampling events collected by the Discharger from 31 August 2004 through 31 July 2007.

- iii. **Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. Sulfate concentrations in the effluent ranged from 49.4 mg/L to 87.1 mg/L, with an average of 70.3 mg/L, for seven samples collected by the Discharger from May 2003 through October 2006. The effluent does not exceed the secondary MCL recommended level of 250 mg/L.
- iv. **Total Dissolved Solids (TDS).** The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The recommended agricultural water quality goal for TDS, that would apply the narrative chemical constituent objective, is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e., a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can

tolerate higher TDS concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the TDS, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The average TDS effluent concentration was 360 mg/L and a ranged from 75 mg/L to 486 mg/L for seven samples collected by the Discharger from 31 August 2004 through 31 July 2007.

- v. **Salinity Effluent Limitations.** Based on the relatively low reported salinity, the discharge currently does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, since the Discharger discharges to Deer Creek, a tributary of the Yuba River and eventually the Sacramento-San Joaquin River Delta, of additional concern is the salt contribution to Delta waters. A maximum annual average of 683  $\mu\text{mhos/cm}$  occurred during the first 9 months of 2007. This Order includes a performance-based effluent limitation of 700  $\mu\text{mhos/cm}$  for EC to be applied as an annual average to limit the discharge to current levels. This performance-based effluent limitation represents the rounded-up maximum annual average effluent EC concentration for a calendar year using data from October 1994 through August 2007. Based on the sample results for the effluent, it appears the Discharger can meet these new limitations. In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan. Also water supply monitoring is required to evaluate the relative contribution of salinity from the source water to the effluent.
- s. **Settleable Solids.** For inland surface waters, the Basin Plan states that “[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.” The previous Order contained effluent limitations of 0.1 mL/L as a monthly average and 0.2 mL/L as a daily maximum. Tertiary treatment processes result in solids removal reflective of the design capabilities of the treatment system. The TSS limitations of 10 mg/L (monthly average), 15 mg/L (weekly average) and 30 mg/L (daily maximum) include suspended and settleable matter in the analysis and an analysis for settleable matter is no longer necessary. With the TSS limitations in place, the settleable solids limits can be removed as an effluent limitation.
- t. **Silver.** The CTR includes a hardness-dependent standard for the protection of freshwater aquatic life for silver. The CTR standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factor for silver in freshwater is 0.85 for the instantaneous maximum criterion. Using the worst-case measured hardness from the receiving water (48 mg/L as  $\text{CaCO}_3$ ) and the USEPA recommended dissolved-to-total translator, the applicable acute criterion (maximum 1-hour average concentration) is 1.15  $\mu\text{g/L}$ , as total recoverable (there

is no published chronic water quality criterion for silver). However, based on recent studies for contaminants where criteria exhibit a concave upward relationship as a function of hardness (e.g., acute silver), use of the lowest recorded effluent hardness and highest recorded receiving water hardness may be used for establishment of water quality objectives. Using the minimum observed hardness of the receiving water (48 mg/L) and the lowest recorded effluent hardness (107 mg/L as  $\text{CaCO}_3$ ) the applicable acute criterion for silver is 4.56  $\mu\text{g/L}$ .

Silver was detected at concentrations ranging from less than the 0.1  $\mu\text{g/L}$  detection limit to 1.57  $\mu\text{g/L}$  in the effluent in seven samples collected between May 2003 and October 2006. Using effluent and receiving water hardness to establish the objective for silver, no reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion exists. Quarterly monitoring has been established for hardness and silver in this Order to gather additional information to determine if silver is present in the effluent above the CTR criterion. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

- u. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

#### 4. WQBEL Calculations

- a. Effluent limitations for dibromochloromethane and dichlorobromomethane were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.
- b. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the ECA is calculated as follows.

$$ECA_{acute} = CMC + D(CMC - B)$$

$$ECA_{chronic} = CCC + D(CCC - B)$$

For the human health, agriculture, or other long-term criterion/objective, a dilution credit can be applied. The ECA is calculated as follows:

$$ECA_{HH} = HH + D(HH - B)$$

where:

$ECA_{acute}$  = effluent concentration allowance for acute (one-hour average) toxicity criterion

$ECA_{chronic}$  = effluent concentration allowance for chronic (four-day average) toxicity criterion

$ECA_{HH}$  = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (one-hour average)

CCC = criteria continuous concentration (four-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

D = dilution credit

B = maximum receiving water concentration

Since no dilution credit is being granted the effluent concentration allowances were set equal to the criteria/standards/objectives.

$$ECA_{acute} = CMC$$

$$ECA_{chronic} = CCC$$

$$ECA_{HH} = HH$$

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

AMELs based on human health criteria are set equal to the human health ECAs and a statistical multiplier is used to calculate the MDEL.

$$AMEL = mult_{AMEL} \left[ \min \left( \overbrace{M_A ECA_{acute}, M_C ECA_{chronic}}^{LTA_{acute}} \right) \right]$$

$$MDEL = mult_{MDEL} \left[ \min \left( \underbrace{M_A ECA_{acute}, M_C ECA_{chronic}}_{LTA_{chronic}} \right) \right]$$

$$MDEL_{HH} = \left( \frac{mult_{MDEL}}{mult_{AMEL}} \right) AMEL_{HH}$$

where:

- $mult_{AMEL}$  = statistical multiplier converting minimum LTA to AMEL
- $mult_{MDEL}$  = statistical multiplier converting minimum LTA to MDEL
- $M_A$  = statistical multiplier converting CMC to LTA
- $M_C$  = statistical multiplier converting CCC to LTA

Water quality-based effluent limitations were calculated for ammonia, dichlorobromomethane, and dibromochloromethane as follows in Tables F-5 through F-7.

**Table F-5. WQBEL Calculations for Ammonia**

	Acute	Chronic (4-day)	Chronic (30-day)
Criteria (mg/L) <sup>(1)</sup>	5.62	6.88	2.75
Dilution Credit	No Dilution	No Dilution	No Dilution
ECA	5.62	6.88	2.75
ECA Multiplier	0.230	0.412	0.700
LTA	1.29	2.83	1.93
AMEL Multiplier (95 <sup>th</sup> %)	1.82	(2)	(3)
<b>AMEL (mg/L)</b>	<b>2.3</b>	(2)	(3)
MDEL Multiplier (99 <sup>th</sup> %)	4.35	(2)	(3)
<b>MDEL (mg/L)</b>	<b>5.6</b>	(2)	(3)

<sup>(1)</sup> USEPA Ambient Water Quality Criteria

<sup>(2)</sup> Limitations based on acute LTA [Acute LTA < Chronic (4-day) LTA]

<sup>(3)</sup> Limitations based on acute LTA [Acute LTA < Chronic (30-day) LTA]

**Table F-6. WQBEL Calculations for Dibromochloromethane**

	Human Health
Criteria (mg/L)	0.41
Dilution Credit	N/A
ECA	0.41
<b>AMEL (mg/L) <sup>(1)</sup></b>	<b>0.41</b>
MDEL/AMEL Multiplier <sup>(2)</sup>	2.01
<b>MDEL (mg/L)</b>	<b>0.82</b>

<sup>(1)</sup> AMEL = ECA per section 1.4.B, Step 6 of SIP

<sup>(2)</sup> Assumes sampling frequency  $n \leq 4$ . Uses MDEL/AMEL multiplier from Table 2 of SIP.

**Table F-7. WQBEL Calculations for Dichlorobromomethane**

	Human Health
Criteria (mg/L)	0.56
Dilution Credit	N/A
ECA	0.56
<b>AMEL (mg/L) <sup>(1)</sup></b>	<b>0.56</b>
MDEL/AMEL Multiplier <sup>(2)</sup>	2.01
<b>MDEL (mg/L)</b>	<b>1.12</b>

<sup>(1)</sup> AMEL = ECA per section 1.4.B, Step 6 of SIP

<sup>(2)</sup> Assumes sampling frequency  $n \leq 4$ . Uses MDEL/AMEL multiplier from Table 2 of SIP.

## Summary of Water Quality-based Effluent Limitations Discharge Point 001

**Table F-8. Summary of Water Quality-based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	--	6.5	8.0
Ammonia	Mg/L	2.3		5.6		
Dibromochloromethane	µg/L	0.41	--	0.82	--	--
Dichlorobromomethane	µg/L	0.56	--	1.12	--	--

### 5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00) The Basin Plan also states that, "...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median.* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

**Acute Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassays ----- 70%  
Median for any three or more consecutive bioassays ----- 90%

- b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires quarterly semi-annual WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.a. requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

#### D. Final Effluent Limitations

##### 1. Mass-based Effluent Limitations

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

##### 2. Averaging Periods for Effluent Limitations

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *"First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed."* (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for, dichlorobromomethane and dibromochloromethane as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, chlorine residual,

coliform weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

### **3. Satisfaction of Anti-Backsliding Requirements.**

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(f).

The previous permit contained effluent limitations for turbidity. The prior limitations for turbidity were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for solids and coliform. The prior effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a water quality-based effluent limitation.

The revised Order contains performance based operational turbidity specifications to be met prior to disinfection in lieu of effluent limitations. The revised Order does not include effluent limitations for turbidity. However, the performance-based specification in this Order is an equivalent limit that is not less stringent, and therefore does not constitute backsliding.

The proposed revised operational specifications for turbidity are the same as the effluent limitations in the previous permit, with the inclusion of a more stringent requirement for an instantaneous maximum limit at any time. (See Special Provisions C.5. Ultraviolet Disinfection (UV) System Operating Specifications for turbidity specifications.) The proposed revised permit moves the point of compliance from the final effluent after disinfection to an internal compliance point prior to disinfection. These revisions are consistent with state regulations implementing recycled water requirements.

The previous Order contained settleable solids effluent limitations of 0.1 ml/L as a monthly average and 0.2 ml/L as a daily maximum. Tertiary treatment processes result in solids removal reflective of the design capabilities of the treatment system. The TSS limitations in this Order are more stringent than the limitations in the previous Order and compliance with TSS limitations will result in settleable solids less than the 0.1 ml/L limitation in the previous Order. Settleable solids monitoring data for the discharge has consistently been reported as less than 0.05 ml/L. The Standard Methods analysis for settleable matter cannot reliably measure below 0.1 ml/L. The TSS limitations of 10 mg/L (monthly average), 15 mg/L (weekly average) and 25 mg/L (daily maximum) include suspended and settleable matter in the analysis and an analysis for settleable matter is no longer necessary. These TSS limitations effectively limit settleable solids concentrations to less than the

previous settleable solids limitations. With the stringent TSS limitations in place the settleable solids limits can be removed as an effluent limitation.

The revision in the turbidity limitation and the removal of settleable solids is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than the prior permit and therefore does not allow degradation.

#### 4. Satisfaction of Antidegradation Policy

The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

### Summary of Final Effluent Limitations Discharge Point 001

Table F-9. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day <sup>1</sup>	93	140	280	--	--
pH	standard units	--	--	--	6.5	8.0
Total Suspended Solids (TSS)	mg/L	10	15	30	--	--
	lbs/day <sup>1</sup>	93	140	280	--	--
Dibromochloromethane	µg/L	0.41	--	0.82	--	--
Dichlorobromomethane	µg/L	0.56	--	1.12	--	--
Ammonia Nitrogen, Total (as N)	mg/L	2.3		5.6		
Nitrite (as N)	mg/L	1	--	--	--	--
	lbs/day <sup>1</sup>	9.3	--	--	--	--
Nitrite + Nitrate Nitrogen, Total (as N)	mg/L	10	--	--	--	--
	lbs/day <sup>1</sup>	93	--	--	--	--

<sup>1</sup> Based on the average dry weather design flow of 1.12 mgd.

**Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

**Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

- 70%, minimum for any one bioassay; and
- 90%, median for any three consecutive bioassays.

**Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

- 0.01 mg/L, as a 4-day average; and
- 0.02 mg/L, as a 1-hour average.

The total residual chlorine effluent limitations are effective until the Discharger submits written certification that a chlorine-based disinfection system is no longer in use and chlorine-containing chemicals are not added to the treatment process for wastewater discharged to the receiving water.

**Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

- 2.2 most probable number (MPN) per 100 mL, as a 7-day median; and
- 23 MPN/100 mL, as a daily maximum.

**Mass Limitation for Mercury.** The monthly average total recoverable mercury loading in the effluent shall not exceed 0.0021 lbs per month.

**Average Dry Weather Flow.** The Average Dry Weather Flow shall not exceed 1.12 mgd.

**Electrical Conductivity.** The annual average electrical conductivity concentration in the effluent shall not exceed 700  $\mu$ mhos/cm.

**E. Interim Effluent Limitations – Not applicable**

**F. Land Discharge Specifications – Not Applicable**

**G. Reclamation Specifications – Not Applicable**

## **V. RATIONALE FOR RECEIVING WATER LIMITATIONS**

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic

substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

#### A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity.

Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, temperature, and turbidity are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface water limitations are as follows:

- a. **Bacteria.** The Basin Plan includes a water quality objective that “[I]n water designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.” Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.
- b. **Biostimulatory Substances.** The Basin Plan includes a water quality objective that “[W]ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for biostimulatory substances are included in this Order and are based on the Basin Plan objective.
- c. **Color.** The Basin Plan includes a water quality objective that “[W]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.
- d. **Chemical Constituents.** The Basin Plan includes a water quality objective that “[W]aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.” Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.

- e. **Dissolved Oxygen.** The Deer Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen. Since the beneficial use of COLD does apply to the Deer Creek, a receiving water limitation of 7.0 mg/L for dissolved oxygen was included in this Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that *"...the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation."* This objective was included as a receiving water limitation in this Order.

- f. **Floating Material.** The Basin Plan includes a water quality objective that *"[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.
- g. **Oil and Grease.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses."* Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.
- h. **pH.** The Basin Plan includes water quality objective that *"[T]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses."* This Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

- i. **Pesticides.** The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.
- j. **Radioactivity.** The Basin Plan includes a water quality objective that *"[R]adionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life."* The Basin Plan states further that *"[A]t a minimum,*

*waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations...* Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.

- k. **Sediment.** The Basin Plan includes a water quality objective that “[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses” Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.
- l. **Settleable Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.
- m. **Suspended Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.
- n. **Taste and Odors.** The Basin Plan includes a water quality objective that “[W]ater shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.” Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.
- o. **Temperature.** The Deer Creek has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.”
- p. **Toxicity.** The Basin Plan includes a water quality objective that “[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.
- q. **Turbidity.** The Basin Plan includes a water quality objective that “[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

A numeric Receiving Surface Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

#### **B. Groundwater**

All processes are contained in concrete basins. The recent upgrades to the treatment facility included elimination of the sludge drying beds and lining the emergency storage pond. There is no potential for pollutants to migrate to groundwater in amounts that could degrade groundwater or cause groundwater to exceed applicable water quality objectives. This Order contains a limitation prohibiting degradation of groundwater.

### **VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS**

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

#### **A. Influent Monitoring**

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD and TSS reduction requirements).

#### **B. Effluent Monitoring**

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream.

2. The SIP states that if "...all reported detection limits of the pollutant in the effluent are greater than or equal to the C [water quality criterion or objective] value, the RWQCB [Regional Water Board] shall establish interim requirements...that require additional monitoring for the pollutant..." This Order contains effluent limitations for ammonia, BOD, TSS, nitrate, nitrite, chlorine residual, pH, flow, toxicity, and total coliform. In addition, reasonable potential to cause or contribute to exceedances of water quality objectives was found for dichlorobromomethane and dibromochloromethane. Monitoring for these constituents has been included in the Order. Based on monitoring data it is uncertain whether, carbon tetrachloride, copper, diquat, MBAS, and silver are present in the effluent in concentrations that exceed applicable criteria. Quarterly monitoring has been established in this Order to gather additional information on these constituents. Based on new monitoring data submitted for aldrin, alpha-BHC, and gamma-BHC indicating these constituents were no longer present, effluent limits were not included. Annual monitoring for these pesticides has been included to gather additional information on these constituents.

#### **C. Whole Effluent Toxicity Testing Requirements**

1. **Acute Toxicity.** Semi-annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Semi-annual chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

#### **D. Receiving Water Monitoring**

##### **1. Surface Water**

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

##### **2. Groundwater – Not Applicable**

#### **E. Other Monitoring Requirements**

##### **1. Biosolids Monitoring**

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.6.a.). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

## **2. Ultraviolet Disinfection System Monitoring**

UV System specifications and monitoring and reporting is required when the UV system becomes operational to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens e.g. viruses in the wastewater. UV Disinfection system monitoring is imposed pursuant to requirements established by the California Department of Public Health, (DPH) and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWARF's *"Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse"*.

## **3. Water Supply Monitoring**

Water supply monitoring is required to evaluate the source of constituents in the wastewater.

# **VII. RATIONALE FOR PROVISIONS**

## **A. Standard Provisions**

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

## **B. Special Provisions**

### **1. Reopener Provisions**

- a. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional

requirements may be included in this Order as a result of the special condition monitoring data.

- b. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:
  - If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
  - When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- c. **Salinity Evaluation and Minimization Plan.** This Order requires that the Discharger to prepare and implement a salinity evaluation and minimization plan to address sources of salinity from the municipal wastewater treatment system. The plan shall be completed and submitted to the Regional Water Board within nine (9) months of the effective date of this Order for approval by the Executive Officer. Based on a review of the results of implementation of the salinity evaluation and minimization plan this Order may be reopened for addition and/or modification of effluent limitations and requirements for salinity.
- d. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

## 2. Special Studies and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00.) The discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. This provision requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with EPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

**Monitoring Trigger.** A numeric toxicity monitoring trigger of  $> 1 \text{ TUc}$  (where  $\text{TUc} = 100/\text{NOEC}$ ) is applied in the provision, because this Order does not allow any

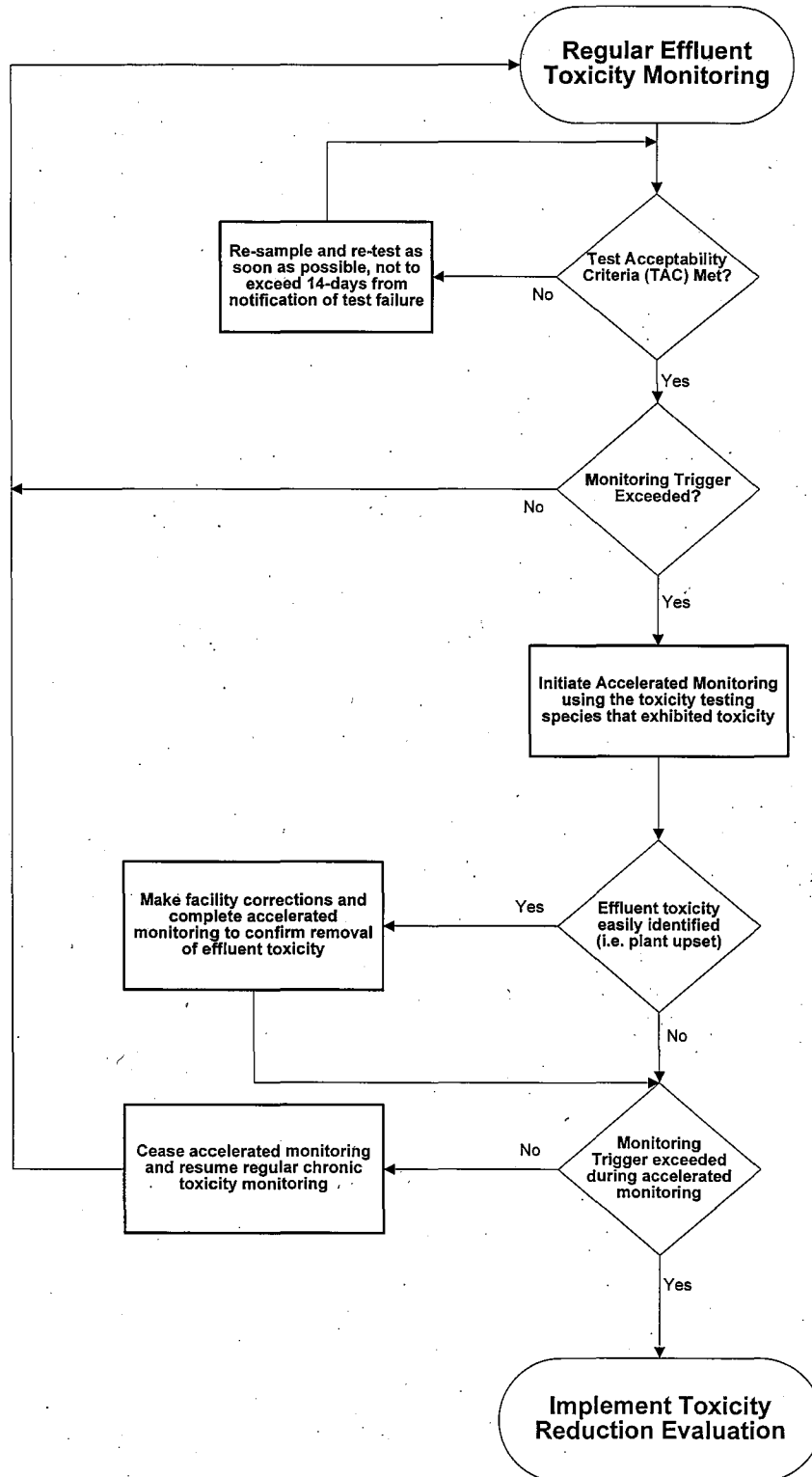
dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

**Accelerated Monitoring.** The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests every 2 weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

**Figure F-1**  
**WET Accelerated Monitoring Flow Chart**



**TRE Guidance.** The Discharger is required to prepare a TRE Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, (EPA/833B-99/002), August 1999.
  - *Generalized Methodology for Conducting Industrial TREs*, (EPA/600/2-88/070), April 1989.
  - *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*, Second Edition, EPA 600/6-91/005F, February 1991.
  - *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.
  - *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/080, September 1993.
  - *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.
  - *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002.
  - *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.
  - *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991.
- b. **Receiving Water Temperature Study:** The Discharger is required to conduct a temperature study in Deer Creek to determine adequate temperature thresholds downstream of the discharge.
- c. **Reuse of Municipal Wastewater Feasibility Study:** The Discharger is required to evaluate the feasibility of utilizing reclaimed municipal wastewater from the new treatment facility for beneficial reuse to reduce area dependence on existing surface and groundwater water supply sources.

### 3. Best Management Practices and Pollution Prevention

- a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to Deer Creek. For example, the Discharger should still be minimizing the use of salt containing substances in their collection system maintenance and in Facility

processes such as additives used for pH adjustment and other chemicals used in the treatment process.

#### 4. Construction, Operation, and Maintenance Specifications

- a. **Emergency Storage Basin Operating Requirements.** The operation and maintenance specifications for the emergency storage basin are necessary to ensure proper operation of the emergency storage basin and minimize the potential for impacts to groundwater quality.
- b. **Ultraviolet Disinfection (UV) System Operating Specifications.** UV System specifications and monitoring and reporting is required when the system becomes operational to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens e.g. viruses in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV System. Monitoring and reporting of these parameters is necessary to determine compliance with minimum dosage requirements established by the California Department of Public Health, (DPH) and the National Water Research Institute (NWRI) and American Water Works Association Research Foundation NWRI/AWWARF's *"Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse"* first published in December 2000 revised as a Second Edition dated May 2003. In addition, a Memorandum dated 1 November 2004 issued by DPH to Regional Board executive officers recommended that provisions be included in permits to water recycling treatment plants employing UV disinfection requiring Dischargers to establish fixed cleaning frequency of quartz sleeves as well as include provisions that specify minimum delivered UV dose that must be maintained (as recommended by the NWRI/AWWARF UV Disinfection Guidelines).

Turbidity is included as an operational specification as an indicator of the effectiveness of the treatment process and to assure compliance effluent coliform limitations. The tertiary treatment MBR process, proposed for this facility, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity and could impact UV dosage. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5% of the time within a 24-hour period; and an instantaneous maximum of 10 NTU.

Minimum UV dosage and turbidity specifications are included as operating criteria in Special Provisions, Section V1.C.5 and Monitoring and Reporting requirements, Attachment E, Section IX.B., to ensure that adequate disinfection of wastewater is achieved.

## **5. Special Provisions for Municipal Facilities (POTWs Only)**

### **a. Pretreatment Requirements. Not Applicable**

### **b. Sludge/Biosolids Discharge Specifications.**

The sludge/biosolids provisions are required to ensure compliance with State disposal requirements (Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq) and USEPA sludge/biosolids use and disposal requirements at 40 CFR Part 503.

### **c. Sanitary Sewer Overflow Requirements**

- i. Sanitary sewer overflows consist of varying mixtures of domestic sewage, industrial wastewater, and commercial wastewater. This mixture depends on the pattern of land use in the sewage collection system tributary to the overflow. The chief causes of sanitary sewer overflows include lack of maintenance; blockages due to grease, roots, and debris; sewer line flood damage; manhole structure failures; vandalism; pumps station mechanical failures; power outages; storm water or groundwater inflow/infiltration; insufficient capacity; and contractor-caused blockages.
- ii. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause exceedance of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.
- iii. The Discharger is responsible for all necessary steps to adequately maintain and operate its sanitary sewer collection system. The provisions in this Order are included to ensure compliance with the requirements in the 2 May 2006; the State Water Board adopted State Water Board Order 2006-0003, a Statewide General WDR for Sanitary Sewer Systems.

## **6. Other Special Provisions**

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Water Board.

## **7. Compliance Schedules – Not Applicable**

## **VIII. PUBLIC PARTICIPATION**

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for Lake Wildwood Wastewater Treatment Plant. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

### **A. Notification of Interested Parties**

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through local newspaper announcement and Internet posting.

### **B. Written Comments**

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on 12 January 2009.

### **C. Public Hearing**

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 5 February 2009  
Time: 8:00 am  
Location: Regional Water Quality Control Board, Central Valley Region  
11020 Sun Center Dr., Suite #200  
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is <http://www.waterboards.ca.gov/rwqcb5/> where you can access the current agenda for changes in dates and locations.

#### **D. Waste Discharge Requirements Petitions**

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board  
Office of Chief Counsel  
P.O. Box 100, 1001 I Street  
Sacramento, CA 95812-0100

#### **E. Information and Copying**

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling 916-464-4620.

#### **F. Register of Interested Persons**

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

#### **G. Additional Information**

Requests for additional information or questions regarding this order should be directed to James C. Pedri at 530-224-4845.